

REMARKS

Reconsideration and allowance of pending Claims 1-30 and 32-49 are respectfully requested.

THE OBJECTION TO THE SPECIFICATION

The Applicant hereby re-submits Appendices A and B (below), which were originally presented in the Amendment of April 6, 2004. The amendments to the Abstract of the Disclosure and the specification are presented in compliance with the requirements of 37 C.F.R. §1.72.

Appendix A includes a new Abstract of the Disclosure that conforms with the requirements of MPEP §608.01(b) and 37 C.F.R. §1.72.

Appendix B includes replacement paragraphs for the specification of the present application to reflect that FIGS. 12A and 12B have replaced FIG. 12, and to further provide appropriate trademark/registration designations as required by page 2 of the Office Action of January 22, 2004.

Favorable consideration is respectfully requested.

THE REJECTION UNDER 35 U.S.C. §102(e)

Claim 32 was rejected under 35 U.S.C. §102(b) as being anticipated by Saadeh, et al. (U.S. Patent 5,283,905; hereafter "Saadeh"). This rejection is rendered moot by the present amendment to Claim 32, as well as corresponding dependent Claim 33. Specifically, Claim 32 has been amended to recite that the claimed computing device is compatible with an automobile. Therefore, since

Saadeh does not teach such feature, it is respectfully submitted that Saadeh does not teach the features of Claims 32 and 33, and the rejection under 35 U.S.C. §102(b) should be withdrawn.

THE REJECTIONS UNDER 35 U.S.C. §103(a)

In the outstanding Office Action:

- 1) Claims 1-4, 8, 10, 15, 16, 32, and 36 were rejected under 35 U.S.C. §103(a) as being unpatentable over the admitted prior art (hereafter “APA”) in view of Mills, et al. (U.S. Patent 5,696,917; hereafter “Mills”);
- 2) Claims 6, 7 and 33 were rejected under 35 U.S.C. §103(a) as being unpatentable over APA and Mills in view of Heyden, et al. (U.S. Patent 5,798,961; hereafter “Heyden”);
- 3) Claims 5, 9, 11, 12, 21-23, 25, 26, 28, 34, 35, 37, 39, 40, 43, 44, and 48 were rejected under 35 U.S.C. §103(a) as being unpatentable over APA and Mills in view of Saadeh;
- 4) Claims 14, 30, 41, 45, 47, and 49 were rejected under 35 U.S.C. §103(a) as being unpatentable over APA, Mills, Saadeh, and Clohset (U.S. Patent 5,384,747; hereafter “Clohset”);
- 5) Claims 13, 29, 42, and 46 were rejected under 35 U.S.C. §103(a) as being unpatentable over APA, Mills, Saadeh, and Price (U.S. Patent 5,604,709; hereafter “Price”);
- 6) Claim 27 was rejected under 35 U.S.C. §103(a) as being unpatentable over APA, Mills, Saadeh, and Heyden; and

7) Claim 38 was rejected under 35 U.S.C. §103(a) as being unpatentable over APA, Mills, and Clohset.

The above-rejections 1) through 7) are substantially *verbatim* presentations of the rejections under 35 U.S.C. §103(a) that were presented in the previous Office Action of January 22, 2004. Rejection 3) (above) is the exception, in that Claim 31 is no longer included in the rejection since it was canceled without prejudice or disclaimer in the Amendment of April 6, 2004.

The Applicant respectfully traverses all of rejections 1) through 7) for at least the reasons set forth in the arguments of the Amendment of April 6, 2004, supplemented by the further reasons presented below, which also address the Response to Arguments on page 11 of the outstanding Office Action. Thus, the Applicant respectfully requests that the above rejections under 35 U.S.C. §103(a) be reconsidered and withdrawn.

Specifically, the Applicant respectfully maintains that the outstanding rejections under 35 U.S.C. §103(a), listed above as rejections 1) through 7), fail to establish a *prima facie* case of obviousness.

Once again, the Applicant draws attention to MPEP §2142, which states in part, “If the examiner does not produce a *prima facie* case, the applicant is under no obligation to submit evidence of nonobviousness.” The Applicant, in good faith and belief that a *prima facie* case of obviousness has not been established by above of the above-listed rejections 1) through 7), requests that all outstanding rejections under 35 U.S.C. §103(a) be reconsidered and withdrawn.

In particular, MPEP §§2142 and 2143, state that a *prima facie* case of obviousness has three basic requirements, including: a) there must be some

suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings; b) there must be a reasonable expectation of success; and c) the prior art references must teach all of the claim limitations. The Applicant respectfully re-submits that the proposed combinations of references, primarily the combination of APA and Mills, fail to meet at least requirement a) (above), and therefore no *prima facie* case of obviousness has been established.

1) More particularly, in the “Background” of the specification of the present application, Fig. 1 is described as showing a portion of a storage system having non-volatile storage 12 and DRAM 14. The description of the relationship between non-volatile storage 12 and DRAM 14 in Fig. 1 includes a technical challenge that reads, in part:

...the challenges associated with providing automotive computing devices such as the Auto PC can be distilled down to not having enough time to write the critical contents of the DRAM into non-volatile memory in the event of an abrupt power shutdown. (see Specification, page 4, line 2 – page 5, line 2).

However, Mills does not respond to the technical challenge set forth on pages 4 and 5 of the specification (see above). That is, APA does not set out to *replace* DRAM in the Auto PC, but rather seeks to improve performance of the Auto PC that has a DRAM and non-volatile memory. On the other hand, Mills teaches away from the embodiment in APA by advocating against the inclusion of a volatile DRAM in the asynchronous non-volatile memory described therein. In

particular, col. 12, lines 10-19 of Mills (portions of which are cited in the rejection) states:

...SRAM 240 can be written to, and read from, faster than can volatile DRAM. Thus, a cache line of internal cache 215 of microprocessor 210 can be filled from SRAM 240 faster than would be the case if a DRAM based main memory was used. Also, programs executing from SRAM 240 can be accessed, and hence executed, faster than would be the case if a DRAM based memory was used. (emphasis provided by Applicant)

The Applicant acknowledges the Response to Arguments on page 11 of the outstanding Office Action, emphasizing that Mills is relied upon to “teach adding a SRAM to the system of APA.” However, the Applicant again notes that Mills discredits the merits of DRAM relative to SRAM to explain the absence of DRAM from the asynchronous volatile memory. Thus, col. 12, lines 10-16 of Mills does not suggest adding SRAM to APA as asserted in both the previous and outstanding rejection (as well as the Response to Arguments), but rather Mills suggests replacing DRAM with SRAM. Therefore, there is no motivation to actually combine APA with Mills. Specifically, neither APA nor Mills provide any teaching that is suggestive of an automotive computing device memory system, as recited in Claim 1, which includes a non-volatile storage, DRAM, and SRAM.

In the Response to Arguments on page 11 of the outstanding Office Action, exception is taken to the Applicant’s argument regarding Figs. 13 and 15 of Mills. The Applicant previously argued that Figs. 13 and 15 of Mills show block diagrams of computer systems that use DRAM to access a flash memory, and therefore the description of Figs. 13 and 15 do not teach or even suggest the

inclusion of an SRAM in the computer system. Instead, the Applicant argued, and presently maintains, Figs. 13 and 15 are suggestive only of Fig. 1 of the present application, *i.e.*, APA. The Response to Argument contends that the fact that Figs. 13 and 15 do not show an SRAM in the computer system is not relevant “since other portions of Mills et al. teaches utilizing an SRAM in a system with a FLASH main memory.” However, the Applicant presently responds that Mills does not teach utilizing an SRAM in a system with a FLASH main memory and a DRAM, as recited in Claim 1.

Therefore, *arguendo*, even if APA and Mills could be combined, the resultant combination would not be obvious because the prior art does not suggest the desirability of the combination, *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990), as discussed in MPEP §2143.01.

The Applicant respectfully submits that the arguments presented above to distinguish Claim 1 from APA and Mills is further applicable to dependent **Claims 2-4 and 8**, which depend from Claim 1.

With regard to independent **Claims 10** and corresponding dependent **Claims 15 and 16** as well as independent **Claims 32 and 36**, the Applicant notes the argument above that APA does not set out to replace DRAM in the Auto PC, but rather seeks to improve performance of the Auto PC that has a DRAM and non-volatile memory. On the other hand, Mills teaches away from the embodiment in APA by advocating against the inclusion of a volatile DRAM in the asynchronous non-volatile memory described therein. Therefore, there is no motivation for combining the asynchronous nonvolatile memory described by Mills with the Auto PC described by APA.

2-7) The Applicant respectfully maintains that the proposed combination of APA and Mills, which is common to all of rejections 1) through 7) is fundamentally deficient with regard to the rejected claims. Specifically, they do not form the basis of a *prima facie* case of obviousness, and none of the other cited references remedy such deficiency.

CONCLUSION

For at least the reasons set forth above, it is respectfully submitted that the rejections over the cited references should be reconsidered and withdrawn.

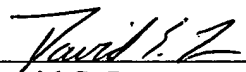
The remaining references of record have been considered. It is respectfully submitted that they do not compensate for the deficiencies of any of the references utilized in rejecting the pending claims, particularly APA and Mills.

All objections and rejections having been addressed, it is respectfully submitted that the present application is now in condition for allowance. Early and forthright issuance of a Notice of Allowability is respectfully requested.

Respectfully Submitted,

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APPENDIX A

ABSTRACT OF THE DISCLOSURE

Methods and systems for operating automotive computing devices are described. In one embodiment, a small amount of static RAM (SRAM) is incorporated into an automotive computing device. The SRAM is battery-backed to provide a non-volatile memory space in which critical data can be maintained in the event of a power loss. Circuitry is provided to ensure that the SRAM receives back up power from the battery at the appropriate time. Software manages the SRAM and the other storage assembly components and makes use of virtual paging or virtual addressing techniques to keep track of where various pages, including object store pages, are stored in the system. The software knows exactly where all of the object store pages are stored so that in the event of a power loss, the page locations are known and hence the pages can be used when power is restored. ~~The SRAM is advantageously used to maintain so-called "dirty pages" or pages that have been written to so that these pages are not lost in the event of a power interruption. Additionally, the software can also provide an orderly means by which pages in the SRAM can be written out to flash memory thereby avoiding unnecessary flash write operations which, in turn, increases the lifetime of the flash memory.~~

APPENDIX B

IN THE SPECIFICATION

Please delete the paragraph on page 1, lines 6-21 of the specification, and insert the following replacement paragraph:

-- Automobiles are becoming increasingly popular platforms on which to provide computing devices. One popular computing device in the automotive space is Microsoft's Auto PC. Powered by the Microsoft Windows® CE operating system, the Auto PC is Microsoft's in-car entertainment and information platform technology. Hardware versions of the Auto PC platform can fit into most automobile dashboards, have color LCD screens, high-powered AM/FM stereos, and CD-ROM drives. The inclusion of the CD-ROM drive allows users to access vast stores of data on their Auto PC. The Auto PC is ideally an extensible platform which can be built upon to provide added applications and functionality for the user. For example, applications can be provided that enable drivers to use voice commands to check e-mail and schedules, find phone numbers, make calls on their car phones and get news and other information. The Auto PC can include applications that permit wireless Internet access for the purpose of searching and retrieving information over the Web. The Auto PC platform provides a platform for a seemingly endless number of user applications that can greatly enhance the user's experience.--

Please delete the paragraphs from page 1, line 24 through page 2, line 19 of the specification, and insert the following replacement paragraphs:

-- In automobiles using Windows® CE or any other type of operating system, there is typically critical data that the system uses which is usually stored in so-called working RAM (i.e. volatile dynamic random access memory) for speed of access. This critical data can include application data (e.g. navigation data, address book data, third party installed applications and the like). Dynamic random access memory has to be constantly refreshed or the data that it contains will be lost. If the power is lost, the DRAM cannot be refreshed and, hence, any critical data that it contains is lost.

Current Windows® CE implementations, as well as other implementations, use a small cell back-up battery that is used to back up the entire DRAM when the system goes in a standby mode associated with, for example, a power loss. For automotive requirements (such as Auto PC and the like), there are a number of problems with this solution. Typically, the batteries that are used for backup purposes do not meet automotive specifications. For example, the temperature ranges at which the batteries work are not suitable for the temperature ranges typically encountered by automobiles. Additionally, automotive manufacturers or original equipment manufacturers (OEMs) do not want consumers to have to go to the burden of replacing the backup batteries when they eventually fail. The backup batteries, such as those produced by Tadiran, which do meet automotive requirements are limited to a few microamps of current draw if the non-rechargeable battery is to last the life of the product without replacement.--

Please delete the paragraph on page 7, lines 3 and 4 of the specification, and insert the following replacement paragraph:

~~--Fig. 12 is Figs. 12A and 12B are combined to show a table that describes describing aspects of handling object store page exceptions.--~~

Please delete the paragraph on page 10, lines 1-12 of the specification, and insert the following replacement paragraph:

-- The computer 202 runs an open platform operating system which supports multiple applications. Using an open platform operating system and an open computer system architecture, various software applications and hardware peripherals can be produced by independent vendors and subsequently installed by the vehicle user after purchase of the vehicle. This is advantageous in that the software applications do not need to be specially configured for uniquely designed embedded systems. In the illustrated example the open hardware architecture runs a multitasking operating system that employs a graphical user interface. A multitasking operating system allows simultaneous execution of multiple applications. One such operating system is the “~~Windows~~” Windows® brand of operating systems (e.g., the “~~Windows~~” Windows® CE operating system) sold by Microsoft Corporation of Redmond, Washington.--

Please delete the paragraph on page 37, lines 21-24 of the specification, and insert the following replacement paragraph:

-- If the physical address is not in range, the fault does not correspond to an object store page, so the handler will simply return. However, if it is in range, the handler will take appropriate action, as outlined below, as well as in the Table of ~~Fig. 12~~ Figs. 12A and 12B entitled "Handling Object Store Page Exception".--

Please delete the paragraph on page 39, lines 14-17 of the specification, and insert the following replacement paragraph:

--~~Fig. 12 contains~~ Figs. 12A and 12B contain a table that generally summarizes the processing that takes place for handling object store page exceptions in accordance with the described embodiment. The explanation of the table is believed to be fairly straight forward and, for the sake of brevity, is not repeated here.--